

**Remarks**

Support for the above-requested amendments to claim 17 is found at least on page 8, lines 25-27. Support for the amendments to claims 34 and 42 is found at least on page 3, lines 17-21 and page 4, lines 28-35. Claims 25, 39, and 45-47 have been canceled without prejudice. Claims 1-16, 29-33, and 41 were canceled without prejudice in a previous Amendment. New claim 48 is supported at least by page 3, lines 36-38. Support for new claim 49 is found at least on page 7, lines 26-30. New claim 50 is supported at least by page 7, lines 32-33. Support for new claim 51 is found at least on page 7, lines 18-24. New claim 52 is supported at least by page 8, lines 9-11. Support for new claim 53 is found at least on page 8, lines 25-27. New claim 54 is supported at least by page 6, lines 35-38. No question of new matter arises and entry of the above-requested amendments and new claims is respectfully requested.

Claims 17-24, 34-38, 40, 42-44, and 48-54 are before the Examiner for consideration.

**Rejection under 35 U.S.C. §112, first paragraph**

Claims 17-25 and 45-47 have been rejected under 35 U.S.C. §112, first paragraph for failing to comply with the written description requirement. In particular, the Examiner asserts that there is insufficient support for the feature that the mat is in an uncompressed state.

Initially, Applicant submits that claims 45-47 have been canceled without prejudice, thereby rendering the rejection of these claims moot.

In response to the rejection of claims 17-25 and 42-43, Applicant has amended claim 17 to remove the feature that the mat is in an uncompressed state. Applicant has also amended claim 42 to remove the feature that the mat possesses sufficient flexibility to be deposited in a mold without forming pleats. In view of the above, Applicant submits that the claims are fully enabled by the specification and respectfully requests that this rejection be reconsidered and withdrawn.

**Rejection under 35 U.S.C. §112, second paragraph**

Claims 17, 34, 42, and 45-47 have been rejected under 35 U.S.C. §112, second paragraph as being indefinite. In particular, the Examiner asserts that the phrase "in an uncompressed state" is a phrase descriptive of a process step. The Examiner asserts that because Applicant has not claimed a process of making the product, the term "uncompressed"

renders the claim indefinite in that the term is not defined by the claim (or in the specification). In addition, the Examiner asserts that the phrase “wherein said mat possesses sufficient flexibility to be deposited in a mold without forming pleats” renders claims 34, 42, and 45 indefinite. Specifically, it is asserted that the degree of flexibility required to prevent forming pleats will depend in part upon the shape of the mold.

Initially, Applicant submits that claims 45-47 have been canceled without prejudice, thereby rendering the rejection of these claims moot.

In response to the rejection of claims 17, 34, and 42, Applicant has amended claim 17 to remove the feature that the mat is in an uncompressed state. In addition, Applicant has amended claim 34 to remove the phrase “wherein said mat possesses sufficient flexibility to be deposited in a mold without forming pleats”. Accordingly, Applicant respectfully submits that claims 17, 34, and 42 are sufficiently definite and earnestly requests reconsideration and withdrawal of this rejection.

**Rejection under 35 U.S.C. §§102(b)/103(a)**

Claims 17-24 have been rejected under 35 U.S.C. §102(b) as being anticipated by, or, in the alternative, under 35 U.S.C. §103(a) as being obvious over U.S. Patent Publication No. 2001/0032696 to Debalme, *et al.* (“Debalme”). The Examiner asserts that Debalme teaches a method of making a composite product that includes reinforcing fibers and thermoplastic organic fibers. It is asserted that the composite product is made by depositing at least 80% by weight of commingled yarns of blended glass fibers and thermoplastic fibers. The Examiner also asserts that the yarns may be in the form of continuous filaments forming superposed loops or chopped fibers. Additionally, it is asserted that the chopped fibers may have a length of 38 mm. Further, the Examiner asserts that the yarns of reinforcing fibers and thermoplastic fibers are bonded together by heat and compression.

The Examiner admits that Debalme does not teach the claimed elongation at break or porosity. However, the Examiner asserts that it is reasonable to presume that these properties are inherent because Debalme uses similar materials and similar production steps.

**Applicant’s Response**

In response, Applicant respectfully directs the Examiner’s attention to independent claim 17 and submits that claim 17, as amended, defines a deformable mat that is not taught or suggested by Debalme. Additionally, Applicant respectfully submits that Debalme does not teach or suggest the combination of features recited in claim 17.

Applicant respectfully submits that there is no teaching or suggestion within Debalme of a deformable mat that includes at least one reinforcing substance and at least one thermoplastic substance where these substances are in a form of a member selected from at least one continuous yarn, chopped yarns and combinations thereof and where the mat has a weight per unit area from 1500 to 3000 g/m<sup>2</sup>. It is respectfully submitted that in the instant application, and as shown in Example 1, a weight per unit area of about 1500 g/m<sup>2</sup> correlates to a thickness of 3.5 mm. In particular, it is respectfully submitted that the fibers in the formed mat of Example 1 were "lightly" bonded in a manner such that the mat achieved a thickness of 3.5 mm and a weight per unit area of 1500 g/m<sup>2</sup> as well as deformability. Similarly, it is respectfully submitted that a weight per unit area of about 3000 g/m<sup>2</sup> correlates to a thickness of 6.5 mm, as shown in Example 2. Applicant submits that the mat of Example 2 was "lightly" bonded so as to achieve a weight per unit area of 3000 g/m<sup>2</sup>, a thickness of 6.5 mm, and deformability.

Applicant respectfully submits that Debalme neither teaches nor suggests a mat that has a weight per unit area ranging from 1500 to 3000 g/m<sup>2</sup> as required by claim 17. Debalme teaches the formation of compressed rigid strips or sheets (*see, e.g.* paragraphs [0068], [0072] and [0082]), at least one of which has a thickness of approximately 3 mm (*see, e.g.* paragraph [0091]). Applicant respectfully submits that the strips and/or sheets formed by Debalme are simply not the same as the claimed, deformable mat having a weight per unit area from 1500 to 3000 g/m<sup>2</sup>. For instance, it is respectfully submitted that the compressed mats of Debalme have a thickness that is smaller than the thickness of the mats of the invention. Also, in Debalme, the employed fabrics had a weight per unit area of only 650 g/m<sup>2</sup>. None of the teachings within Debalme teaches or suggests a mat that has a weight per unit area from 1500 to 3000 g/m<sup>2</sup>. Indeed, it is respectfully submitted that Debalme is silent with respect to any teaching or suggestion of a mat that has a weight per unit area from 1500 to 3000 g/m<sup>2</sup>. In view of the above, Applicant respectfully submits that claim 17 is non-obvious and patentable.

In addition, Applicant submits that there is no motivation for one of skill in the art to arrive at a deformable mat as claimed in claim 17 based on the disclosure of Debalme. In order to establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, and the prior art reference (or references when combined) must teach or suggest all the claim

limitations. (*See, e.g., Manual of Patent Examining Procedure*, Patent Publishing, LLC, Eighth Ed., Rev. 7, August 2008, §2143 citing *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007)).

Applicant respectfully submits that one of ordinary skill in the art would have no motivation to arrive at a deformable mat that includes at least one reinforcing substance and at least one thermoplastic substance, these substances being in the form of at least one continuous yarn and/or chopped yarns, where the mat has a weight per unit area from 1500 to 3000 g/m<sup>2</sup> based on the disclosure of Debalme at least because Debalme does not teach or suggest a deformable mat having a weight per unit area from 1500 to 3000 g/m<sup>2</sup>. Without some teaching or suggestion, there can be no motivation, and without motivation, there can be no *prima facie* case of obviousness.

Further, Applicant submits that because Debalme does not teach or suggest a deformable mat having a weight per unit area from 1500 to 3000 g/m<sup>2</sup>, Debalme fails to teach all of the claim limitations set forth in claim 17. Accordingly, it is submitted that a *prima facie* case of obviousness has not been established for this additional reason.

With respect to claims 18-24, Applicant submits that because independent claim 17 is not taught or suggested by Debalme and claims 18-24 are dependent upon claim 17 and contain the same elements as claim 17, dependent claims 18-24 are also not taught or suggested Debalme.

In light of the above, Applicant submits that claims 17-24 are not anticipated by, or obvious over, Debalme and respectfully requests that this rejection be reconsidered and withdrawn.

#### Rejection Under 35 U.S.C. §103(a)

Claim 25 has been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Publication No. 2001/0032696 to Debalme, *et al.* ("Debalme"). The Examiner admits that Debalme fails to teach the claimed basis weight. However, the Examiner asserts that it would have been obvious to one of skill in the art to arrive at a basis weight of at least 700 g/m<sup>2</sup> since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering optimum or workable ranges involves only routine skill in the art.

#### **Applicant's Response**

In response to this rejection, Applicant submits that claim 25 has been canceled without prejudice, thereby rendering the rejection of claim 25 moot. Accordingly, Applicant respectfully requests reconsideration and withdrawal of this rejection.

**Rejection Under 35 U.S.C. §103(a)**

Claims 34-44 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Publication No. 2001/0032696 to Debalme, *et al.* ("Debalme"). The Examiner admits that Debalme fails to teach stitch bonding the web to bind the mat. However, the Examiner asserts that stitch bonding the mat would have been readily obvious to a skilled artisan. The Examiner asserts that stitch bonding is a well known method of integrating a web to enhance the mat's dimensional stability. In addition, the Examiner concludes that it would have been obvious to one of skill in the art to employ a binder yarn finer than the yarns of the mat in order to minimize the bulkiness of the stitch bonding and to enable a finer stitch density which would further enhance the dimensional stability. With respect to claims 38 and 41, the Examiner states that discovering an optimum value of a result effective variable involves only routine skill in the art. Further, regarding the claimed elongation at break and porosity, the Examiner asserts that it is reasonable to presume that these properties are inherent because Debalme uses similar materials and similar production steps.

**Applicant's Response**

Initially, Applicant submits that claim 39 has been canceled without prejudice, thereby rendering the rejection of this claim moot.

In response to the rejection of the remaining claims, Applicant respectfully directs the Examiner's attention to independent claims 34 and 42 and submits that claims 34 and 42, as amended, define deformable mats that are not taught or suggested by Debalme. Additionally, Applicant respectfully submits that Debalme does not teach or suggest the combination of features recited in claims 34 and 42.

Looking first at independent claim 34, Applicant submits that Debalme teaches a composite product obtained by a process that consists of (1) depositing glass threads, of which at least 80% by weight thereof are commingled threads, (2) transferring the glass threads and organic material through a number of zones where the glass threads and the organic material are heated and/or cooled with compression, and (3) cutting or winding the sheets. (See, e.g., paragraphs [0012]-[0015] and claim 1). Debalme does not, however, teach or suggest a deformable mat that is formed of (1) at least one reinforcement substance in the form of a first yarn consisting of reinforcement fibers and (2) at least one thermoplastic substance in the form of a second yarn consisting of thermoplastic fibers as required by claim 34. In Debalme, a majority (e.g., greater than 80%) of the threads are commingled threads.

In contrast, in the claimed deformable mat, the thermoplastic yarns and the reinforcing yarns are formed entirely of a thermoplastic substance and a reinforcement substance, respectively. In the deformable mat of claim 34, there are no commingled yarns. Debalme simply does not teach or even suggest a deformable mat that is formed entirely of yarns that are not commingled. Indeed, Debalme is silent regarding any teaching or suggestion of a deformable mat that is formed of at least one reinforcement substance in the form of a first yarn consisting of reinforcement fibers and at least one thermoplastic substance in the form of a second yarn consisting of thermoplastic fibers. Accordingly, Applicant submits that claim 34 is non-obvious and patentable.

In addition, Applicant submits that there is no motivation for one of skill in the art to arrive at a deformable mat as claimed in claim 34 based on the disclosure of Debalme. In order to establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, and the prior art reference (or references when combined) must teach or suggest all the claim limitations. (*See, e.g., Manual of Patent Examining Procedure*, Patent Publishing, LLC, Eighth Ed., Rev. 7, August 2008, §2143 citing *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007)).

Applicant respectfully submits that one of ordinary skill in the art would have no motivation to arrive at a deformable mat that is formed of (1) at least one reinforcement substance in the form of a first yarn consisting of reinforcement fibers and (2) at least one thermoplastic substance in the form of a second yarn consisting of thermoplastic fibers based on the disclosure of Debalme at least because Debalme does not teach or suggest a deformable mat that is formed entirely of yarns that are not commingled. Without some teaching or suggestion, there can be no motivation, and without motivation, there can be no *prima facie* case of obviousness.

Further, Applicant submits that because Debalme does not teach or suggest a deformable mat that is formed of at least one reinforcement substance in the form of a first yarn consisting of reinforcement fibers and at least one thermoplastic substance in the form of a second yarn consisting of thermoplastic fibers, Debalme fails to teach all of the claim limitations set forth in claim 34. Accordingly, it is submitted that a *prima facie* case of obviousness has not been established for this additional reason.

With respect to claims 35-38 and 40, Applicant submits that because independent claim 34 is not taught or suggested by Debalme and claims 35-38 and 40 are dependent upon claim 34 and contain the same elements as claim 34, dependent claims 35-38 and 40 are also not taught or suggested Debalme.

Turning to independent claim 42, Applicant submits that Debalme does not teach or suggest a deformable mat that includes a first yarn including (1) a reinforcing substance and (2) a second yarn including a thermoplastic substance where the first and second yarns are a combination of chopped yarns and continuous yarns. Applicant acknowledges that Debalme teaches an embodiment that deposits a material exclusively in the form of chopped threads on a substrate and an embodiment that deposits a material exclusively in the form of continuous threads on a substrate. (*See, e.g.* paragraphs [0022] and [0023]). Debalme does not, however, teach or suggest an embodiment that includes a combination of chopped and continuous yarns to form a mat as is required by claimed 42. In Debalme, the chopped or continuous fibers may be combined with a fabric to form a composite. (*See, e.g.* paragraphs [0025]-[0046]). Nowhere in Debalme is there any teaching or suggestion of combining chopped and continuous yarns. Indeed, Debalme is silent regarding any teaching or suggestion of a deformable mat that is formed of a combination of chopped and continuous yarns as claimed in claim 42. Accordingly, Applicant respectfully submits that claim 42 is non-obvious and patentable.

In addition, Applicant submits that there is no motivation for one of skill in the art to arrive at a deformable mat as claimed in claim 42 based on the disclosure of Debalme.<sup>1</sup> Applicant respectfully submits that one of ordinary skill in the art would have no motivation to arrive at a deformable mat that includes a first yarn including (1) a reinforcing substance and (2) a second yarn including a thermoplastic substance where the first and second yarns are a combination of chopped yarns and continuous yarns based on the disclosure of Debalme at least because Debalme does not teach or suggest combining chopped and continuous yarns to form a mat. Without some teaching or suggestion, there can be no motivation, and without motivation, there can be no *prima facie* case of obviousness.

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<sup>1</sup> In order to establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, and the prior art reference (or references when combined) must teach or suggest all the claim limitations. (*See, e.g.*, *Manual of Patent Examining Procedure*, Patent Publishing, LLC, Eighth Ed., Rev. 7, August 2008, §2143 citing *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007)).

Further, Applicant submits that because Debalme does not teach or suggest a deformable mat that includes a first yarn including a reinforcing substance and a second yarn including a thermoplastic substance where the first and second yarns are a combination of chopped yarns and continuous yarns, Debalme fails to teach all of the claim limitations set forth in claim 42. Accordingly, it is submitted that a *prima facie* case of obviousness has not been established for this additional reason.

With respect to claims 43-44, Applicant submits that because independent claim 42 is not taught or suggested by Debalme and claims 43-44 are dependent upon claim 42 and contain the same elements as claim 42, dependent claims 43-44 are also not taught or suggested Debalme.

In light of the above, Applicant submits that claims 35-38, 40, and 42-44 are not obvious over Debalme and respectfully request that this rejection be reconsidered and withdrawn.

**Conclusion**

In light of the above, Applicant believes that this application is now in condition for allowance and therefore requests favorable consideration.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

If necessary, the Commissioner is hereby authorized to charge payment or credit any overpayment to Deposit Account No. 15-0860 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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